

1006
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TESTIMONY OF WILLIS A. EVANS

(PRESENTED AT THE CAL-FED HEARING, SANTA ROSA, CA. SEPTEMBER 9, 1999)

My name is Willis Evans. I am a fishery biologist and ecologist, with over fifty years of professional experience in this field.

Prior to World War II, I was employed by the California Department of Fish and Game at their Marine Fisheries Laboratory on Terminal Island and assigned to investigation of the sardine fishery. It was obvious at that time to the experienced scientists with whom I was working that a collapse of that fishery was inevitable, under the existing commercial overutilization of these fish stocks. Most of you are familiar with the resultant eventual collapse of this major California fishery.

After World War II I returned from military service in the Pacific Theatre and was subsequently assigned to the Central Valley Salmon Investigation, also conducted by the California Department of Fish and Game. My assignment was on a team investigating the status of salmon and steelhead populations in the San Joaquin River system. It was quite evident, even at that time, that we were losing the salmon runs of the San Joaquin and other river systems. With the construction of dams and diversions of flows for crop irrigation the loss of these fish resources was diagnosed as inevitable, unless prompt action was taken.

Despite these early warnings, the agricultural development continued in a manner that has resulted in constant decline of these valuable public trust resources.

Concurrently, with the continued construction of major dams in the Sacramento River system, the inevitable decline of natural runs of salmon and steelhead has resulted in these rivers also, despite all efforts to sustain the runs through artificial propagation, by the operation of fish hatcheries, which have not solved the problem.

Despite these largely misdirected efforts, and the construction of even more dams, loss of these valuable public trust fish resources appears inevitable unless more stringent corrective measures are promptly taken.

Basically, I repeat, the major attempts to save these public trust fish resources throughout the Central Valley river systems has not been successful to date.

One of the major truths we should have learned by this time is that you cannot sustain the runs of anadromous fishes in our Central Valley river systems by the artificial rearing and release of these fish stocks from hatcheries, as a substitute for their natural reproduction and survival in a natural environment.

It is of timely interest to note that this same conclusion is being reached by the competent fish biologists studying the Columbia River system, where major dams have been constructed for purposes which interfere with the normal life cycle and permeation of valuable anadromous fish runs. Despite the fact that these dams have been constructed mainly for the generation of electrical energy, rather than agricultural production, the end result has been the same. It has become obvious that such a heavy adverse impact on the normal life cycle of these salmon stocks, as caused by these large dams cannot be corrected by the establishment of huge artificial rearing facilities, (in the form of fish hatcheries), or even the attempted artificial transport of these young fish downstream to the ocean.

The key question is: Are we going to profit by the experience of our state neighbors to the north and accept the fact that artificial propagation (fish hatcheries) do not work as a substitute for sustaining salmon populations, when their normal environment is no longer available. Let us hope so. (This concept should not be confused with the successes enjoyed from artificial pen rearing of salmon for direct marketing, rather than for reestablishment of natural runs.)

What then is the solution to our present Central Valley anadromous fish resource dilemma? There are no simple easy solutions, but there are certain facts that have become evident, whether dams are being built on coastal rivers for electrical power generation or agricultural crop irrigation. These are:

1. You cannot, under our present state of knowledge, substitute the natural life cycle of salmon and steelhead survival in our river systems, by substituting artificial propagation of these fishes in fish hatcheries, rather than allowing them to live and reproduce naturally in their native river environments, where suitable natural conditions exist.

2. Despite our knowledge of sophisticated efficient methods of artificial

propagation of anadromous fishes, we are not apt to learn how to successfully artificially rear salmon and steelhead in fish hatcheries during their juvenile life in freshwater and equip them with the ability to survive and adapt themselves in the wild state when released. (And in addition, to be capable of migrating downstream successfully out of our river systems and adapting themselves to several years of long migrations in the ocean environment, and returning to their natal streams.)

Under our present state of knowledge, this would be comparable to keeping human infants after birth, in an incubator for their first 12-15 years of life and then turning them loose to become well adjusted young adults in our current society. Rediculous as it may sound, this is exactly what we are doing to young salmon and steelhead raised in our fish hatcheries. We give them tender loving care and all the food they can eat, but unfortunately we have not been able to teach them how to survive and adapt to the rigorous natural environment that we abandon them to "on their own". The truth of the matter is that the survival rates of these hatchery reared "spoon fed" juveniles is so low that it does not warrant the effort and expense of trying to maintain fish populations in this artificial manner. Most recent genetic studies of artificially reared salmon stocks (and steelhead) confirm the fact that their survival in the natural environment is so low that they do not even show up as contributing to the hereditary gene stock in future populations. Recent extensive samples of both salmon and steelhead populations in our coastal streams find little or no evidence of dna genes from these hatchery plants having successfully integrated with natural wild stocks present. This means that the thousands of young salmon and steelhead that we have been artificially rearing in our fish hatcheries for years and then planting^{ed} in certain new river systems have actually had little or no effect upon increasing the natural fish run in these streams. If this is true, (and I believe the evidence is there), why do we continue to raise salmon and steelhead in hatcheries, and release them in various rivers of California and elsewhere, under the guise that they are contributing to the restoration of that particular anadromous fish run? Ask yourselves that question, please.

Now that I have outlined some weaknesses in our present system of restoring salmon and steelhead in our Central Valley river system, what positive suggestions can I contribute to the restoration process? Here are my conclusions and recommendations:

1. Stop immediately the attempted mitigation of our salmon and steelhead run losses in the Central Valley river systems through artificial propagation of salmon and steelhead in fish hatcheries. This is an expensive process that does not pay off. Use these funds more productively by providing suitable natural habitat for these species throughout the Central Valley in selected suitable river systems, where these fishes can successfully complete their normal life cycle, throughout the entire fresh-water phase.

2. Assess more accurately, on a scientific basis, means of restoring and maintaining natural aquatic habitats in our Central Valley River systems that can support salmon and steelhead throughout the entire fresh water phase of their life cycle.

3. Make realistic assessments of the status and condition of natural existing habitats, as well as altered environments, and develop sound management plans for such waters in each individual river system, that are based upon sound scientific data. These proposals must then be analysed separately from the socio-political standpoint as to their feasibility and compatibility with other proposed water management uses. Start your planning for optimal usage of water for both agriculture and fisheries, then scale down as required to make both uses compatible within the framework of available water. (Remember, no one will be bargaining for anything less than optimum water needs for agriculture. This same approach should apply for optimum water flows for fishlife.) Then secondarily each use of water must be realistically scaled back to fit the available supply. Negotiations must be fair and honest, with adequate public review, prior to decision making.

4. Make realistic assessments of the status of natural environments, for both agriculture and fisheries to develop sound coordinated joint plans at the outset, rather than each side developing an unrealistic steadfast stance at the outset and then try to defend their position. We need development of coordinated "turf positions" at the outset in order to end up with mutually acceptable middle ground positions.

5. Learn to examine new proposed land and water development projects more thoroughly in their initial phases, as to both socio-political, as well as biological and environmental implications. More honest and scientifically based analyses are necessary.

6. Emphasize better utilization of qualified professional scientists in resolving such problems, rather than escalation of discussions initially into legal exercises and processes controlled and manipulated ^{by} legal staff elements, rather than scientists.

7. Require that the final results of the Cal Fed Central Valley Investigation be summarized in a final report of not over ten pages, that is made directly available to the public, with ample time for review and comment. Let this also serve as the basic document for final negotiations, with detailed data on both scientific and socio-political matters appended as supporting data for those who wish to delve more deeply into the subject. The ultimate object should be to inform adequately those members of the public and private sector that are responsible for making overall decisions.

8. Clarify further the role of federal and state agencies that are responsible for implementation of the Endangered Species Act (federal) and what role they will play in the final development of the Cal Fed Project. Theoretically, as soon as our salmon and steelhead species are declared to be officially either "threatened or endangered" under the federal Endangered Species Act, it immediately shifts control of the planning and development process for these species and their habitat areas involved, to other federal agencies (namely National Marine Fisheries Service or Fish and Wildlife Service). It further requires them to prepare a Recovery Plan for each and all listed species affected by the proposed project, within a specified time frame. I find no simple clarification of how the federal Endangered Species Act affects the current Cal Fed Plan and its implementation. Theoretically, the action on the Restoration Plans by NMFS/FWS would supercede the present Cal-Fed Plan and its implementation currently being debated. I see no concrete evidence that either Cal Fed or NMFS are in the process of preparing a Recovery Plan for listed anadromous fish species in the Central Valley river systems of California. It is not even clear at this point whether a Recovery Plan for species under the Endangered Species Act is being put forth by Cal Fed, as a substitute course of action.

Please provide for public consumption a conceptual easily understood plan as to how Cal Fed proposes to develop an overall plan which produces a workable compromise between water needs for public trust resource protection and also water needs for a defined level of agriculture, within the framework of existing federal and state laws.

TO: CAL-FED BAY DELTA PROGRAM
% Calif Department of Water Resources, Suite 1155
Sacramento, CA 95814

FROM: Willis A. Evans, Evans Environmental Consultants
Box 244
San Geronimo, CA 94963

Subject: Comments on the CAL-FED BAY DELTA PROGRAM (With emphasis on Protection and
Management of Fisheries Resources)

I. INTRODUCTION

My name is Willis A. Evans. I am a fishery biologist and ecologist, with over fifty years of professional experience in this field. Prior to World War II, I was employed as a fishery biologist with the California Department of Fish and Game at their Marine Fisheries Laboratory on Terminal Island assigned to their sardine fishery investigation. Most of you are familiar with the resultant eventual collapse of this major California fishery. During World War II, I served as a Fishery Officer on General MacArthur's staff in Japan working on the recovery of the Japanese fishing industry. At the close of the war, I returned to work with the California Department of Fish and Game and was assigned to the Central Valley Salmon Investigation, working on the San Joaquin River system. In subsequent years I became Fisheries Management Supervisor for the Region 3 Central Coastal area, in charge of fisheries from Mendocino County south through San Luis Obispo County, including the Delta area and San Francisco Bay. Later I served as ~~Project Manager~~ in West Africa for five years as Project Manager of Volta Lake, which was the largest man-made lake in the world at that time. Upon returning to the U.S. I was employed by the U.S. Forest Service, in charge of fisheries work for the national forests of California. In this capacity I represented the U.S. Forest Service in the Trinity River water development projects. Currently, I am retired but available for consulting work, under the registration of Evans Environmental Consultants.

II. Basic Overview

It is suggested that the following steps be recognized in presenting the basic overall fundamentals of the Cal Fed Project to the public for easy understanding:

Basic Overview

1. Summarize where the Project stands today.
2. Where we are trying to get to in the future. (Clarify time schedule.)

3. Outline the principles that must be defined and adopted prior to any additional major construction or alteration of current land and water operations.

4. Plan project as a whole, clarifying how it would work, prior to any new construction or manipulation of water flows. This means reaching agreement on all major points before any new construction or water manipulation is undertaken. The highest priority at present is to examine instream flows, storage and release programs currently being implemented for all uses such as agriculture, domestic water supplies, public trust aquatic resources, etc. At the same time examine existing flow regime patterns being provided at present under present existing operational plans. In other words, determine to what degree existing water needs are being met in relation to water supplies currently available. I doubt if there are presently any major categories of water use that would agree that existing water allocations were sufficient to meet their needs. Hence the need for the current inventory. Differentiation must be made between consumptive and non-consumptive uses, plus noting any significant changes in water quality by recognized uses. Consumptive uses are defined as those uses that either consume the water in the utilization process or so alter it that it is no longer acceptable for use by others, in its altered state. An example is irrigation water, which after use, is sufficiently altered so as not to be capable of reuse for other water purposes.

This inventory of waters and their current level of use should be outlined by dividing our California Central Valley water system into four unit areas for planning purposes:

1. Sacramento River system.
2. San Joaquin River system
3. San Francisco Bay and Delta system.
4. Water being currently exported to Southern California, without use in any of the other three categories.

After defining the water currently being utilized consumptively in each of categories 1 through 4 define the relationship between water supply currently available in relation to total water need.

What would such statistical water data tell us about the current situation?

- a. How do current water needs compare with current water supplies in each of these areas? (Would this essentially be the present picture of supply in relation to present needs?)

Area I Sacramento Valley - Adequate supply for present local needs. (This includes instream flow requirements for aquatic resources and "in area" water use for recreation.)

Define the amount of water required for these purposes.

Define the amount of surplus available monthly and annually.

Area II San Joaquin Valley - (Make same determinations.)

Results will probably show insufficient water to meet current needs (Municipal, agriculture, instream flows for aquatic resources, etc.)

Area III Delta and Bay Areas (Make same determinations)

Results would probably indicate insufficient water reaching the Delta to meet present requirements for both Delta and Bay areas. Bay water needs have increased due to need for pollution dilution. Delta also adversely affected by water exported to Southern California from Delta pumping systems.

Area IV Water exported to Southern California.

Can it be considered surplus to needs of Areas I-III?

Is it based on higher priority needs in Southern California in relation to what? (Higher population? agriculture needs?)

Is it a real need in view of other water sources available in Southern California?

The net result of an analysis of this type should give the general public a better understanding of whether our current water supplies in these four areas are sufficient to meet current present day needs. If we don't meet current water needs adequately, how much water supply are we lacking in each area and what are the main causes of the deficiency? For example, how much has agriculture in Southern California been responsible for delivery of northern California water to Southern California. Hasn't Southern California water supply from local sources, such as the Colorado River, Owens Valley, etc. kept pace with local demands, without import from the north? Are all these questions fully answered in the depths of the present Cal-Fed ^{Report,} Which few citizens will find time to digest? Are we assuming Southern California cannot meet its water needs, without our sending water south or is it an established fact, verified in the Cal-Fed report? Have all important factors, such as this, been adequately covered in the current draft Cal-Fed report? I admit ignorance on many of these crucial points, even though I have probably studied the current draft plan more than the average citizen who is trying to understand this problem. Are there any key factors that have not been defined in your

current draft report?

For example, in Area IV Southern California have you adequately explained to the lay public the critical problems or "downside" of conducting extensive irrigated agriculture in arid regions of the state, such as Southern California? For example:

1. Is it true that due to the arid climate considerably more water is required to irrigate crops in Imperial Valley, as compared to San Joaquin Valley? We know that the soils of arid areas such as parts of Southern California contain high quantities of salts which have collected in these soils over geologic time. To successfully farm such areas one must flood the farm land with copious amounts of water that will dissolve the salts present, and remove such salts from the root areas of growing crops. Such salt laden water is "wastewater" and must be drained from agricultural fields and disposed of in order to successfully grow crops. Disposal of such waste water is no simple matter and requires considerable planning and expense. As an example, we have not yet found adequate solutions for disposal of wastewater from agriculture in the San Joaquin Valley. Is this situation explained sufficiently in your plan draft for the public to understand such problems as wastewater disposal in Imperial Valley, or the status of the proposed "San Joaquin Drain" in that Valley? I would assume that you have fully covered such matters in the draft Cal-Fed Report, as the solution of such problems would seem a major criterion in selecting those areas of the State where intensive agriculture can be carried out at reasonable costs and without conflicts concerning the disposal of these waste waters. My real question is therefore: Are we leveling with the public in a full understanding of this major problem and its solution in selected agricultural areas? It is particularly vital in relation to sustaining fish and wildlife resources in such areas of irrigated agriculture. (The San Joaquin Valley embroglio on this subject should be adequately covered and explained. (To my knowledge, no real solution to this serious problem has yet been resolved. Am I in error?) I do know that the Imperial Valley wastewater drainage, which was disposed of by draining it into the Salton Sea, via the New and Alamo Rivers was responsible for the destruction of the Salton Sea recreational fishery.

There are of course many other major problems seriously affecting public trust fish resources that must be more fully considered before the draft Cal Fed Plan can be considered complete.

My primary message is this:

1. It is quite possible that public trust fishery resources of the State are going to be much more adversely affected by the Cal-Fed Project than your draft report indicates. There are certain facts that lead me to believe that your proposed program for mitigation of damage to public trust fishery resources from the Cal Fed Project might be entirely or largely inadequate to sustain and protect our public trust fishery resources. Even though fishery resources may be a secondary consideration, they nevertheless will be an important consideration in making the final overall decision as to whether this major water plan as presented is acceptable and in the best public interest. Specifically, I do not believe that some of the solutions to mitigate the adverse effects of the total water development project upon our public trust resources are practical and feasible. Here are a few examples:

1. There has been ample evidence currently compiled to date to strongly indicate that the loss of salmon and steelhead public trust resources cannot be properly mitigated or sustained through artificially rearing these fishes and releasing them into the wild. This system simply doesn't work. We must find other more workable methods of mitigating fish resource damage by the Cal Fed Project or admit openly that this will be one of the losses we must weigh against the overall benefits of such a huge water project.

2. If you have followed the large Columbia River Basin projects to the north of us you will know that they are running into the same impasse of presuming that adverse impact upon public trust fish resources could be readily solved by shifting to the artificial propagation of these fish species in fish hatcheries as a means of sustaining these runs. They have now recognized their mistake and are looking to other more viable solutions to the fish problems. I suggest Cal Fed do the same.

3. I, as well as other fish biologists, that are familiar with our California

river systems, will be more than glad to cooperate with you in devising more viable solutions as to how our public trust fish resources can be retained in the course of California's water development programs.

I would be more than happy to meet with your fisheries team and exchange ideas, as to how the fish resources can be maintained under the inevitable further development of the Cal Fed Water Plan.

I would like to suggest you consider the following approaches at this time:

1. Delete from your planning process any consideration of mitigating public trust fish resource losses by the operation of fish hatcheries or artificial propagation. Discontinue the operation of mitigation fish hatcheries and utilize these funds in more productive ways, such as improvement of natural fish habitat.

2. If you decide that the water development proposals are required, in the best public interest, despite the loss of these fisheries resources, calculate the monetary value of the lost resources. Include this as one of the costs of the specific project, using the mitigative funds to improve or sustain other populations of these public trust resources in river systems of the State where they have a better chance for sustained survival.

3. Somehow you must develop a solution to the problem of what Cal Fed will do if and when these fish species are listed under the federal Endangered Species Act as either endangered or threatened. I suggest that this contingency be realistically dealt with in your draft report.

Thank you for the opportunity to submit these comments, I hope they will be accepted in the constructive manner that they are intended. After having worked on many of the river systems being investigated I will be glad to work with you in the resolution of these difficult problems.

Willis A. Evans

WILLIS A. EVANS
EVANS ENVIRONMENTAL CONSULTANTS
Box 244
San Geronimo, CA 94963-0244

Encl/ Testimony - Santa Rosa Hearing of Cal-Fed.